Schools and the legacy of hybrid buildings

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Schools and the legacy of hybrid buildings

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Abstract. Learning from the past, collecting data on the Italian condition of school buildings, our R&D work aimed to question the design process of school buildings in Italy introducing an innovative model of school, which turned the conventional and isolated, mono-functional and rigid school buildings into interior urban public spaces and porous community hubs to empower the communities around them and to become manifestos of sustainability. Through some built examples of school buildings designed in Italy, the paper discusses the outputs and impact of the introduction of new design layouts, participation projects with different stakeholders and sustainability. The research has guided the introduction of the new Italian guide-lines for school building design, approved in 2013. A future perspective to be explored is the reconsideration of exporting the strategy in different contexts and to design reconsider other public infrastructures turning the mono-functional use of public buildings into hybrid and multifunctional ones.

1 Introduction

It can be argued that to design a school is usually to cope with very restrictive requirements, a constrained budget and a very specific functional brief. This was not always the case in the past. In the early 19th century, both in Europe and in the United States, school buildings, changing under the demands and advocacy for better and healthier spaces for children and based on the principle of equality among individuals, became an expression of democratic ideals, while improving the standard condition of living. Both European and American architects explored ways in which they could combine concerns for health and security together with new pedagogical approaches. The result were school buildings serving as very important vehicles of cultural expression of the society of that period. Since architectural history and contemporary production is filled with instructive examples, it is the intention to make a selection of the major exemplary school buildings to reflect id some of their values are still important in contemporary.

Over the past twenty years, and today even more there seems to be a renewed interest in school design. When we started the research, in the specific Italian territory, poor data was available about the status of school buildings and the topic seemed of low interest among the architecture community.

Instead, we believed that good built design examples had the potential to drive back the interest towards these small buildings, which are crucial in the networks of our cities and communities.

2 Materials and methods

Our methodology of work is looking in three different directions. Through the study of the evolution of the school typology, on the one side we have selected a series of examples from the past where schools were transcending their functional character and becoming representations of the culture and the society of that specific time. More specifically related to the Italian condition, the second direction

was related to the gathering of data about the status, age and funding of school buildings in Italy. A third direction was that of design, which was used as a tool to question the different steps of the process in place to design a school. Our intention was producing a series of built examples which could raise questions about the role of schools in contemporary cities.

2.1 Learning from the past

Highlighting some crucial moments of transformation of the school typology in the Western culture, where schools have become representative of political and cultural shift, the following paragraphs are not meant to trace exhaustively the evolution of the school typology. Through the analysis of some instructive examples, they are trying to raise questions which may be still valid today, when designing a school.

2.1.1 The origins of the school building typology. Undergoing new accelerated processes of industrialization at the end of the Nineteenth Century, the Western world was assisting at the flow of large capitals available and a new concentration of workers moving from the countryside. Cities were rapidly growing, while work flows were broken and component activities needed new forms of organization to be more efficient. Norms of social behaviour were imposed on all spheres of the social life and individuals were expected to conform to new broader socio-political frames, as they were part of a huger organization, than those of their families or small local communities. Work, schooling, family life and leisure underwent this process. Furthermore, within the processes of democratization and pursuing the object of improving standards of living, education was considered the tool of a political elite frightened of an uneducated mass eroding its social benefits exercising choice thanks to the universal adult (men) suffrage. To vote they needed to know how to read and write.

If the first schools were derived from the typo of the 'aula', a schoolroom designed as a place to house the largest number of students with the least expense, very soon a gallery and wood divisions were added, as in the example of Stow and Wilderspine (figure 1) [1], so that the children could have a better view and be taught in smaller groups. At the end of the century compulsory education separated the children from the society. School became a universalized space designed to hold children. The child was transformed into a schoolchild and his/her life started to be organized. Standards, such the minimum square feet and cost limits, compactness and efficiency of circulation, were introduced.

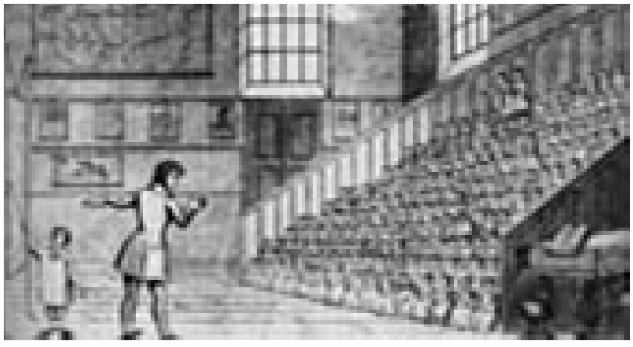


Figure 1. S. Wilderspin, The gallery iside the aula.

A large number of publications [2] of the time show that the topic was crucial. Robson, the Director of the School Board in Britain, had travelled all over America, Switzerland, Germany, Austria, France, Belgium and The Netherlands, with the scope of gathering new ideas for the huge number of new schools, which were to be built in England following the Elementary Education Act, imposing schooling to all children from 5 to 13. Both in the Prussian and English models, school buildings became the expression of order, classification, discipline and recreation. The brick-made construction, with white-painted frames became a style marking, the presence of schools throughout the Countries.

Between WWI and WWII, social reformers, town planners and architects worked together to meet popular demands for better housing, health and education. Both in Europe and the USA studies, publications and school prototypes were the expression of the alliance between social democracy and architectural modernism to promote healthy growth and social development of children.

Schools became manifestos of the optimism in new architectural possibilities and technologies: openness, flexibility and informality in education was pushing from the teacher-centred to the child-centred education.

2.1.2 Dudok's laic churches. Interesting experimentations of school design are Dudok's schools in The Netherlands. Bridging between tradition and innovation, mixing vernacular solutions such as pitched roofs with the more trendy, industrial-style glazing [3], Dudok highlights fundamental matters such as orientation (classrooms facing one side, that of the sun), colour as part of the design and visibility in the neighbourhood. Through the introduction of high chimneys "They were soon regarded as the 'churches' of the new districts, culturally as well as contextually (...) And so the school building became a type, identifiable and familiar in the cityscape and fully integrated and assimilated in the urban blocks. Indeed, these schools expressed in their monumentality and not without pride the unconditional acceptance of educational institutions of the social democracy of the first half of the 20th century" (figure 2) [4].

Figure 2. W. M. Dudok, Nassausschool, Hilversum.

2.1.3 The American way: the child at centre. John Dewey is one the major contributors to the educational reform in the United States. His books [5-9] highlight the role of schools as social institutions, places where the social reform is taking place, places where the children would acquire both knowledge, as well exploiting their full potential.

Furthermore, Dewey argues that, in order for education to be most effective, content must be presented in a way that allows the student to relate information to prior experiences. Dewey advocated for an educational structure that strikes a balance between delivering knowledge, while also taking into account the interests and experiences of the student. He notes that "the child and the curriculum are simply two limits which define a single process. Just as two points define a straight line, so the present standpoint of the child and the facts and truths of studies define instruction" [7]. These ideas were reflected into the work of modernist American architects among which two of them migrating from Europe: William Lescaze and Richard Neutra [10].

2.1.4 Richard Neutra: low cost schools representing life and art in America. Even if not built the ideal model of the school, the Ring School Plan, designed by Richard Neutra [11] presents some characters which will be inspirational for William Lescaze and the author's later school production, such as the use of the oval plan, which reduces the space of circulation, as well as providing a controlled playground; the introduction of special spaces for labs, theatre and other public programmes; the direct

connection of the classroom outside through the use of sliding doors; the provision of direct natural light on both sides of the building and the use of the roof as a running track.

Neutra's schools [12] create a transparent, open layout in strong relationship with the outdoor space.

Schools are domestic spaces with movable furniture and they can be activated on demand from the different activities, following in this way, Dewey's philosophy of 'learning by doing'.

Classes are designed only on the ground floor, facing the garden towards which they are opened. Light comes from the big windows, as well as from the opposite side, from a higher window played in section. Sliding doors are opening towards the outdoor spaces.

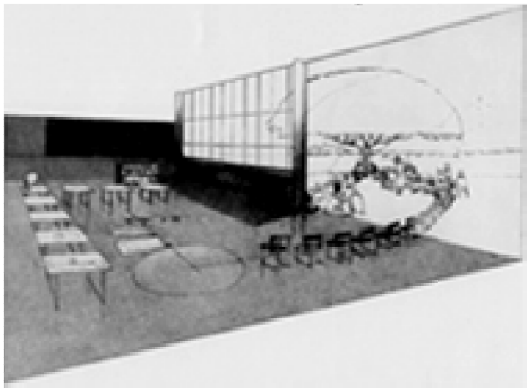


Figure 3. R. Neutra, Emerson College, Junior High School

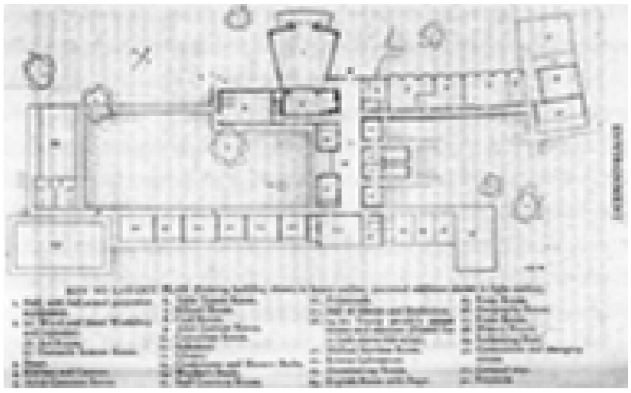


Figure 4. W. Gropius, M. Fry, Impington Village Cambridgeshire, 1939

In 1937, Neutra designed the Ralph Waldo Emerson Junior School, in the Westwood District of Los Angeles (figure 3).

Neutra expanded his model into a two-storey building designed to resist earthquakes. While for the ground floor he was using the same solution of the sliding glazed door used for the Corona, the upper floor was defined by open air terraces on the roof. Vivid colours for murals were introduced.

An interesting event accompanied the process as students were involved in a television program titled 'The Building of Emerson', where the students were playing the roles of the director, the teachers, the students. As a testimony of the role of schools as cultural benchmarks, this building was chosen to represent 1930s America [13].

Appointed by the American Governor Rexford Tugwell, as the coordinator of a public building Committee in Porto Rico, Neutra was able to transfer his work to a less wealthy environment.

Due to a lower budget, he substituted the glazed sliding doors with tilting doors. His design influenced south American school architecture, pushing the classes toward the outside space and using metal structure and light materials for the inner walls.

2.1.5 Walter Gropius and Eero Saarinen: seed of participation and interdisciplinarity. Many architects moved to London and the US, seeking refuge from the political and economic conditions in mainland Europe: Goldfinger, Gropius, Lubetkin and Schumacher are some of them.

Introduced to the Chief Educational Officer for Cambridgeshire, Henry Morris, Gropius was appointed for the design of the Impington Village College (figure 4). The College, opened in 1939, is described as 'one of the best buildings of its date in England, if not the best' [1]. The innovation introduced is the capacity of the building to work as a school (age 11-14) during the day and as an adult education and community centre for nearby villages during the evening. The typology reflects the idea of a small city, with a central promenade turning into an informal social space open to a larger community.

Another interesting innovative idea was explored in the single-storey Crow Island Elementary School at Winnetka, Illinois, 1940 [14]. Community participation was introduced by the architects, Eliel and Eero Saarinen and Lawrence Perkins (Figure 5). Teachers and other members of Winnetka

school community were participating in the design, together with the school Superintendent of Winnetka City, Carleton Washburne, a passionate advocate of child-centred education who was also president of the Progressive Education Association and inspired by the laboratory school philosophy and practice that emphasized self-direction in learning and rejection of classroom recitation.

The Saarinen approach was to split the volume in its smaller, intimate, homelike units, expression of the needs and desires of the youngest. Each of the L-shaped "one-room school" modules is provided with large glazed openings to admit light into all the rooms and the hallways. Colours are introduced to provide for the welfare of the children, who would spend there most of their time of work and play. Each classroom is in direct contact with its own small courtyard, a sort of outdoor room, contributing to expand the sense of spaciousness and freedom.

The invention of an L-shaped classroom unit [15] is very clearly distinguishable and opened to the outdoor, wind-sheltered courtyard. Classrooms can be considered isolated cottages grouped around a central administrative unit, library and auditorium.

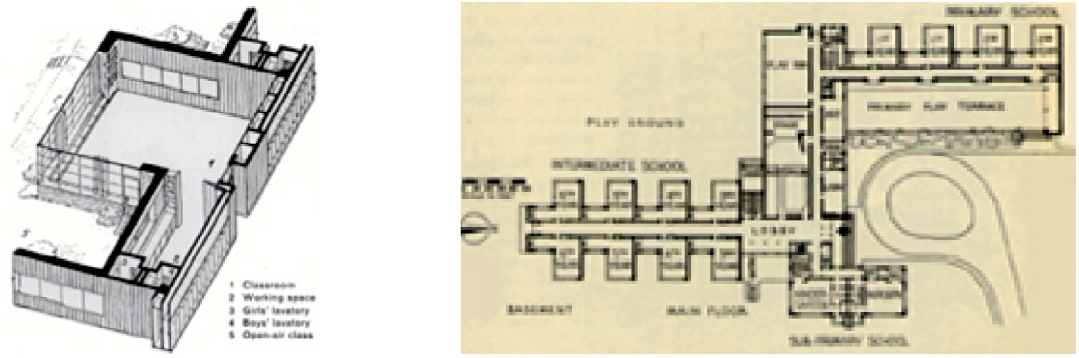


Figure 5. E. Saarinen, Lawrence and Perkins,
Crow Island Elementary School at Winnetka, Illinois Junior High School.

Materiality creates a warm homely environment with the use of pine-clad walls and linoleum flooring. Each classroom has a glass-panel transom door opening onto a courtyard, linking outdoors and indoors. The one windowless interior wall in each classroom has served as the tack board, that teachers have used and loved for 50 years. The ceilings, lowered to create a more intimate space, are finished in acoustical plaster and the recessed lighting contributes to create a calming atmosphere. Classroom doors are painted different, bright, primary colours so nobody gets lost. The school was a significant model of interdisciplinary collaboration, with furniture designed by the architects, ceramic sculptors and glazed ceramic plaques by artists.

2.1.6 A hybrid school concept: Prestolee School. On the opposite side of the Ocean, special notice deserves the work of educator Edward Francis O'Neill who, between 1918 and 1953, inside an existing school building, Prestolee primary and nursery school [1], in Lancashire, England, pioneered the idea of active learning against the conventional frontal teaching. The model of a school with classes grouped around the assembly hall with outdoor playgrounds as separate entities, was neglected in favour of the continuity between indoor and outdoor space. The space was designed in a way that there was no more distinction between work=indoors and play-outdoors.

In a tarmac play yard were introduced flower beds, a vegetable garden, water fountains, bathing pool and areas for construction, a four-meter-high windmill standing on a 1.8 meter wall was built by the elder boys. The assembly hall was accessible to students of all ages also beyond the compulsory school hours: the schools was opened 12 hours a day). Screens and tables were moved in and out in relation to the different activities. Self-generated research was substituting forced learning in a flexible environment.

2.1.7 The European way: open air and pavilion schools. In Germany, in 1904, Dr. Bernhard Bendix and pedagogue Hermann Neufert founded in the wood of Charlottenburg, near Berlin, the first open air school: the Waldeschule, where Classes were conducted in the open-air as medical treatment to children with pre-tuberculosis. The experiment, started by the International Congresses of Hygiene, was immediately spread throughout Europe and North America.

On that model, in 1927, Duiker and Bijvoet were commissioned to translate that principle in the urban realm, in Amsterdam-South [16] (figure 6). Designed as a square block with four levels, the school layout works diagonally offering more flexibility in the inner special arrangement. The four sections of the plan gather around a diagonal central staircase. The classrooms, facing east and west, share an open-air space on the south façade, which on the ground floor acts as the entrance space. The gymnasium is half sunk on the ground.

Keeping the corners free of columns, the position of the structural grid increases the amount of light, which could enter the spaces through the fully glazed facades.

Figure 6. Duiker and Bijvoet, School in Amsterdam.

Schools as manifestos of a new healthy and educated society. In a similar way to Duiker and Bijvoet school in Amsterdam, Andre Lurcat's Karl Marx School complex in Villejuif, Paris (1931-1933) and Eugene Beaudoin & Marcel Lods, Open-Air School, Suresne, Paris, 1935-1936 (figure 7) can be considered representation of the social reforms in action. Air, light, sanitation, ventilation, heating are topics of research to give back, through school buildings, the image of the new values of health and education for all people. Classes are designed as single small pavilions looking like free-standing houses, with a special identity and direct relationship to the outdoor spaces and introduce little by little the idea of a school as a metaphor for the city [17] Collective spaces are enriched with spaces for dining areas, physical training and dormitories.

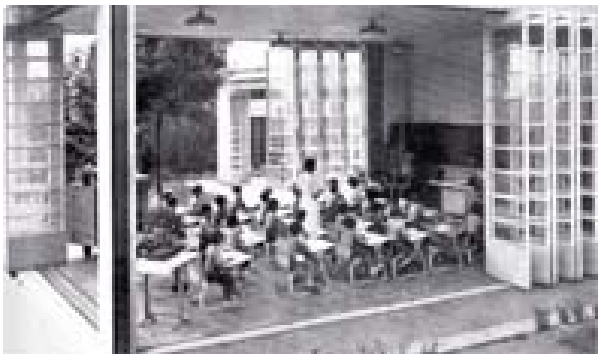


Figure 7. Beaudoin and Lods, Open-Air School, Suresne, Paris.

2.1.8 Schools as representations of political reforms. One of the outstanding examples for school design is the project of Terragni's Sant'Elia nursery school in Como (figure 8) [18] recognized by the critics as one of the best of Terragni's production.

Bridging together the type of the monastic cloister and the classical three parted composition, the projects opens up the facades which become a diaphragm, enabling the link between the interior and the exterior spaces. Terragni uses architecture to fight the rigid Gentile school reform and expressing his faith in fascism as the possibility of having a freer and more transparent society or using his words "Fascism is a glass house inside which everybody should be able to look inside..." Transparency, in this example, is not only happening between interior and outdoor spaces, but also between classes, with sliding panels that can put different spaces in communication.

Figure 8. Terragni, Sant'Elia Nursery School, Como.

2.1.9 The Dutch outdoor classroom: Arne Jacobsen. Trying to tie together the side-corridor principle and the open-air pavilion types, Arne Jacobsen's Munkegård Primary School in Gentofte, 1949-57 (figure 9) [19] is a school for up to1000 students, which links the building to its landscape. Thanks to a creative disposition of the classrooms (no more one near to the other) it was possible to reduce the number of corridors and create a child-scaled atmosphere. In this project, the idea of the outside classroom becomes more consistent, as it is defined by walls and no more only by vegetation.

A very interesting topic with the one-storey building is the possibility of working on the roof section, and being able to modulate the incoming of natural light.

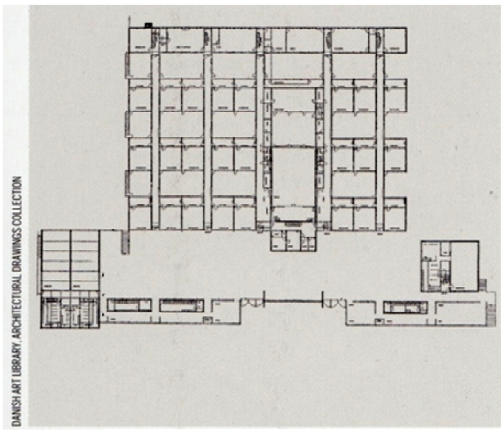


Figure 9. Jacobsen, Munkegård Primary School, Gentofte.

2.1.10 Schools built after the reconversion of the steel industry: the Smithson. Between 1944 and 1960, the destruction post WWII urged to rebuild quickly and cheaply. Using industrially produced, standardized light steel members, relatively cheap results could be quickly achieved with a surprising freedom in how the floor plans were organized.

Within this cultural and economic environment sits the project of the Hunstanton Middle School [20] by of Alison and Peter Smithson (figure 10).

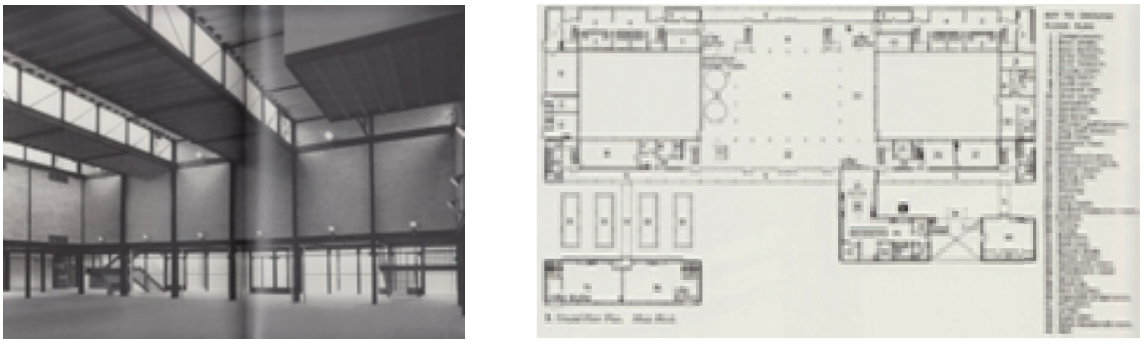


Figure 10. Smithson, Hunstanton School, Norfolk, England.

The school building was one of the many public competitions held by the Attley Labour Governament when, in 1944, following the The Butler Education Act, it was compulsory for children to go to school until the age of 15. The school houses 450 students aged 11-18.

It is organized around three courtyards among which the central one is the main hall, a covered all-high inner square which is the community centre of the school and where also assemblies take place.

The same space can become a canteen, an auditorium and a theatre.

Besides "…an everyday life of teaching children" there must be "a secret life of pure space, the permanent built Form...which will continue to exist as an idea", which must not be criticized but intended in that broader idea as a space which is able to change under use". Through these words of Alison Smithson it is clear that the multi-purpose space on the ground floor acts as the space of potentials of the project, a hybrid unique space which can be activated by people and communities. Classrooms are upstairs, each accessing with its own stair and lit on both sides.

The construction [21] is simple and clear: an uncovered welded steel skeleton, into which large panels of glass have been inserted directly. The interior and exterior walls are exposed yellow bricks, the ceilings are prefabricated rib plates placed on the supports; the steps are unpainted wood; the railing are painted iron; electric light is provided by hanging lamps, the electrical conduits and plumbing are visible; and the sanitary fixtures are arranged as simply as possible.

The interior design is reduced to the minimum possible; there is no detail that is not related to the raw structure of the building.

2.1.11 The school as a small city: Bruno Taut and Hans Sharoun. In the post war Germany, the architect Hans Sharoun experimented on school design models as representations of a democratic society, measured on the scale of the children.

Associated, in his youth, with the Utopian architects grouped around Bruno Taut in Berlin, Sharoun developed his school design influenced by Taut's school in Dammweg (figure 11), which was designed sharing ideas with the berliner pedagogue Fritz Karsen and which consisted in creating a small city-like school building from the nursery to the high school for 2000-2500 students [22].

The idea was that the corridor, metaphor of a street, was inhabited by the students' life. All spaces are on the ground floor and connected to the garden. There are specific classrooms for each school, while laboratories, art and music classes, a theatre, gymnasium and the pool are shared and also used by the surrounding community. The classrooms were enlightened by the roof, thanks to its section and

opened outside with sliding doors. A very important topic of his study is the shape of the classroom or, as he called it, Schulwohnung (class-dwelling), giving the idea of a space centred on the identity of the individual. His architectural approach was that to design a warm, lively and emotionally nurturing environment where children could develop their identity and, at the same time, develop their belonging to the community.

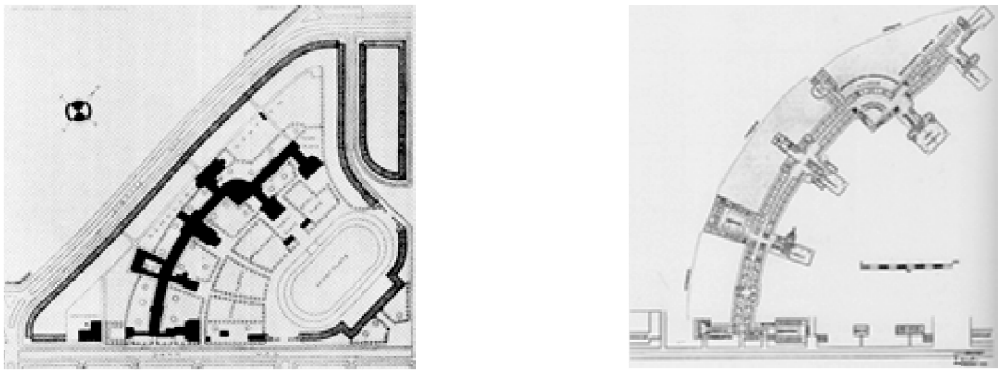


Figure 11. Taut, School in Dammweg, Neukoln, Germany.

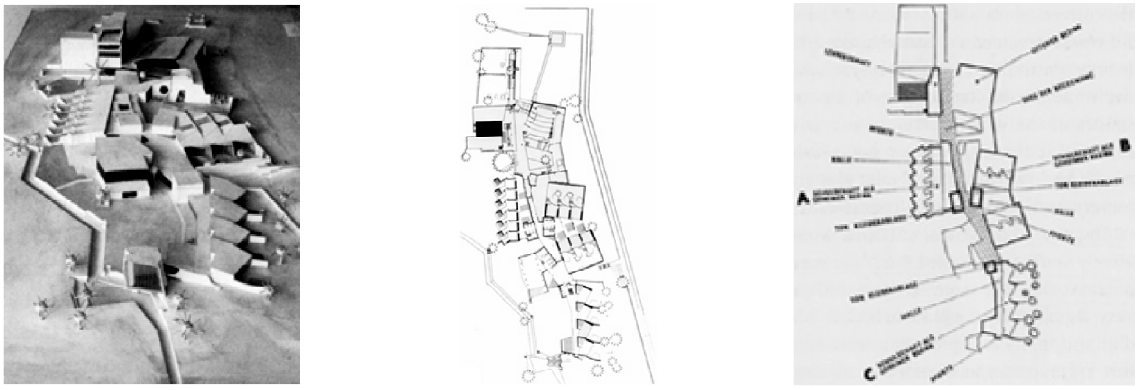


Figure 12. Sharoun, Model of school, Darmstadt.

In the post-Fascist era, such an aspiration became a political priority in order to challenge the authoritarianism of the past and the passivity of the youngsters.

The 'public' spaces of the school, where formal and informal social interaction happens, were considered to be as important as the spaces for formal learning. The hexagonal shape of the classrooms and the polygonal space of the assembly was a representation of a democratic form, open to discussion and active participation in learning, where a freer disposition of furniture was encouraged.

With his metaphor of the school as a city, Sharoun wanted to prepare the child to his future responsibilities, contributing to the public life and the political foundations which are rooted inside.

2.1.12 The power of the threshold space: van Eyck and Herzberger. Three schools were commissioned to Van Eyck inside the new village of Nagele drained in 1942 (figure 13).

By the shifting of the classrooms it was possible to generate an open corner with a big window toward the outside as well as a porch at the entrance [23]. Inside there are small squares connected by streets. All spaces gather in the central hall, which can also be used for education purposes. Porches are also outside in the playground. A sequence of threshold spaces is created and all the parts of the school begin to have equal value and to be used for schooling.

Figure 13. Van Eyck, School in Nagele.

This school becomes the reference for the Montessori School in Delft by Herman Herzberger, where spaces are organized with different gradients of privacy, from the community areas to the desk of the single child.

Criticizing the frontal way of teaching as depending on the teacher's mood and children not feeling at home when they're in school, Herzberger conceptualizes the school model, from the basic class to the articulated space. [24]. Herzberger creates his schools putting a tension between the classrooms and the surrounding spaces, in the aim of arousing the child's curiosity and inciting confrontation.

Herzberger traces four different steps in the modification of the classroom:

a.) an increase in the number of places, by differentiating the rectangular classroom, with ancillary spaces;

b.) the addition of a threshold between the class and the corridor;

c.) the idea of a classroom changed from a place of duty to that of a home base module;

d.) the creation of a learning landscape where classrooms are only one part of it.

The school building is the outcome of the equilibrium between the idea of safety and that of exploring.

Amsterdam public Montessori schools were built from 1923 under the pressure of Edward Polak, the city Alderman for Education. In these first examples, additional spaces were added inside the classrooms, such as 'a tiled kitchen space' to let water to splash out and water cans supported the watering of the plants inside the classroom. Children had a long sink to use water to wash, paint and modelling in clay independently.

There was a 'resting room', similar to a sitting room and a threshold space with cupboards and glazed doors. Each child will do his own work and even prepare sketches behind a sheet with a class sized to 95 sqm.

In the early Sixties, the administrative board of the Montessori Schools in Delft commissioned Herzberger a first school.

According to the Montessori method, children generally work individually on self-chosen activities, where concentration differs with the type of work and is one of the problems. Herzberger designed a space to prevent that possibility. As a Theoretic model, Herzberger chose the snail's shell which is increasing protection inwards and increasing openness outwards. Translated into a school spatial model, that concept was developed in a sequence of zoning, running from seclusion and privacy to successively more public and social spaces.

The classroom, connected to the rest, becomes a kind of workshop were children are able to see the growing of their work.

2.1.13 The power of flexibility: Jean Prouvè. Classroom furniture was following a similar evolution to that of school buildings. Traditional heavy school desks were predominant until WWII, while flexible school seating developed and trailed in the 1920^{s}, but were not able to become standard until 1945 [25].

From the initial heavy models where desks were rigidly connected to the seating, variable systems were designed, through the combinations of movable and rigid parts [26].

A key feature of Bauhaus furniture design for schools was the introduction of tubular steel, a new lighter material which offered huge possibilities of free movement, if compared with the traditional cast iron or solid wood.

Keeping on with the spirit of the school, Beaudouin and Lods introduced aluminium, a material which was rarely used at that time, for its pieces of furniture, which became light enough for the children to move themselves outdoor.

In Crow Island School in Winnetka, Illinois, the furniture was designed by Larry Perkins and Eero Saarinen and included light plywood tables and chairs that could be arranged in groups of different sizes, depending on the lesson.

Between 1935 and 1955 the French Architect Jean Prouvè invented completely new kinds of school desks. Inspired by aircraft construction, he introduced a combination of different cross-section of tubing along with tapering sheet steel profiles and drawn steel sheet, which were not very common at that time.

Prouvè was initially trained as a metal craftsman. His material of preference for furniture was folded sheet and tubular steel. The jump of scale from product design to prefabrication was easy through the use of aluminium. Prouvè's idea was that of having the possibility of disassembling parts in order to ship them abroad overseas.

The design of a school emerged from a competition organized by the French Minister of Education in 1949. The brief called for a one-classroom primary school and accommodation for the teacher. It also specified that the design should have been suitable for series production, quick and easy to assemble and disassemble, and be suited for any site. Jean Prouvè and his brother were appointed by the Government to produce a prototype, made entirely of prefabricated building components in steel, aluminium and wood (figure 14).

Figure 14. Prouvè. Primary school in Vantoux/Moselle, France.

2.2 The status of Italian schools and the challenge of fast change

In parallel to the critical reconsideration of some major innovations in school design, we were trying to understand the data of the specific environment we had decided to explore, Italy. When the research was started in 2002, the design programs for school buildings were very specific and followed the codes, which in Italy were dating back to 1975. Not a lot of data were available about the status of school buildings at that time.

2.2.1 Data collection on the status of schools. Data collected are referred to the status of schools to 2013. Looking at data collected from the Italian Government [27], we could understand that about 65% of schools were built before 1974 and only 9.3% between 1991 and 2014. Data were also

showing how few resources were assigned to schools during the past three decades. Vast improvement needed to be applied to the finance assigned to maintenance. According to the same data, there was also a large number of unused schools, especially in the Southern part of Italy: in Calabria and Sardinia the number of unused buildings was higher than those in use. Even though recent data shows that there are small improvements of schools responding to the Italian codes of health and safety, more than 30% are not certified. Other diagrams focus on the use of renewable energy sources and specifically look at the Veneto Region, where 72.1% of schools were built before 1974 and many need urgent interventions of maintenance. On top of this, it is obvious that data can only provide quantitative analysis, but were not considering the quality of the spaces, their relationships, the impact of space on education or their potential of representing the innovation and changes in course.

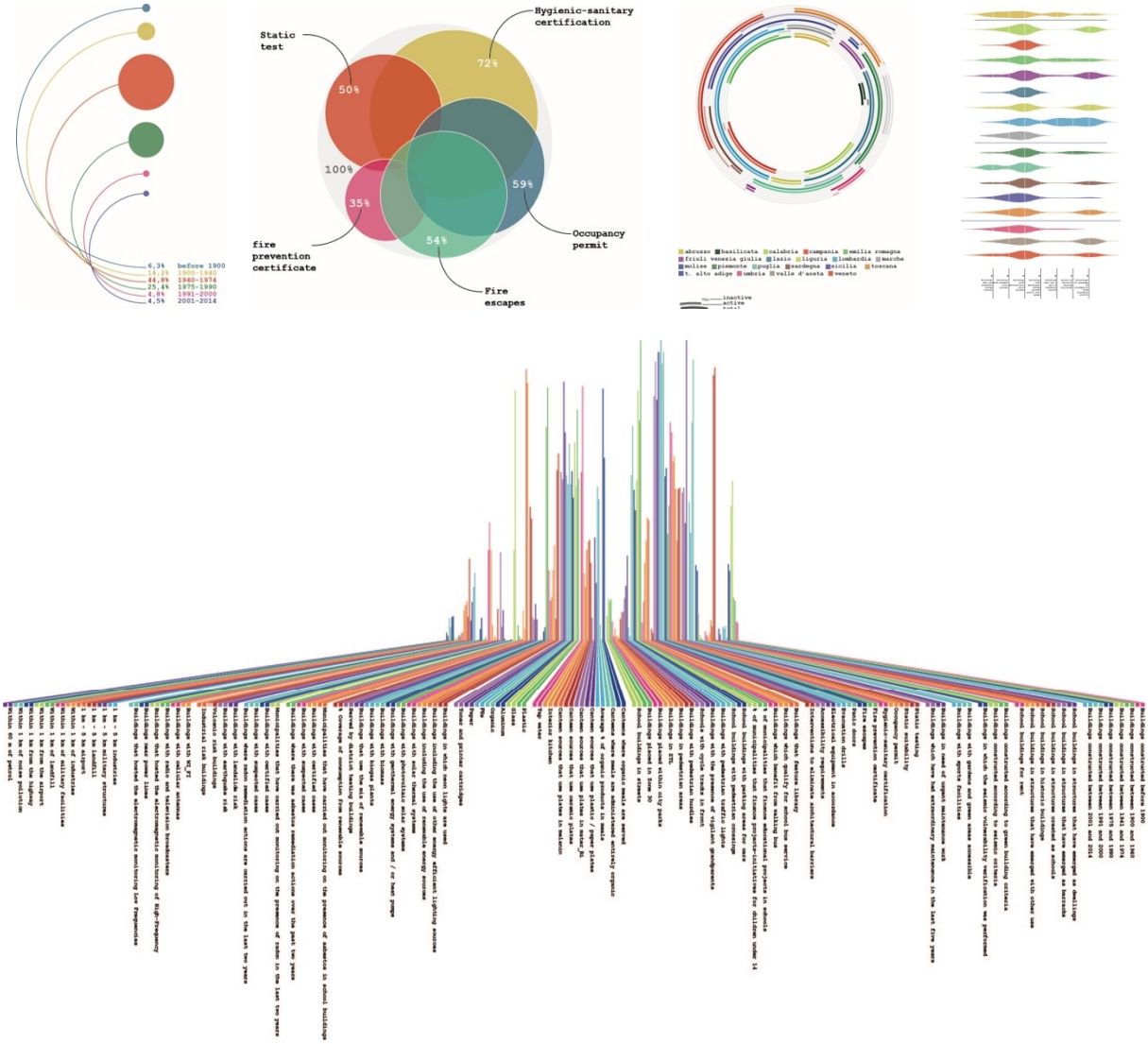


Figure 15. Diagrams showing the age of the buildings, their efficiency status and their certifications.

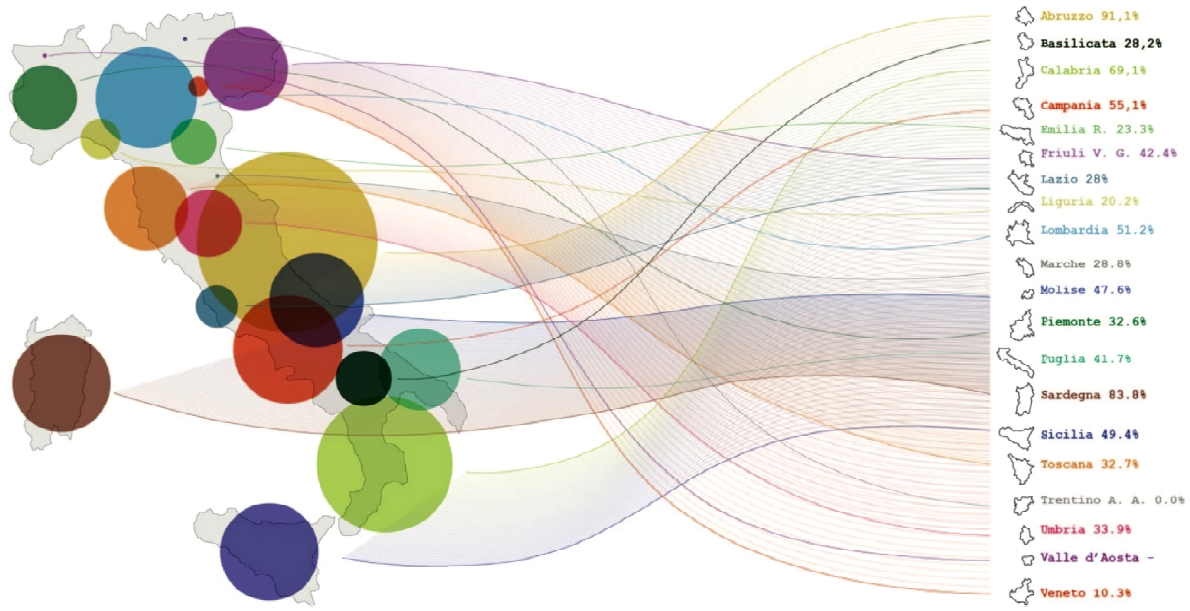


Figure 16. Diagram showing buildings in need of urgent maintanence.

2.2.2 Mapping Treviso network of infrastructures and public spaces. With their intelligent network of interconnected objects, smart cities are imagined empowering municipalities, enterprises and citizens to make better decisions and raising the qualities of their lives, cutting costs and improving sustainability. Citizens interact with smart city ecosystems: connecting their phones or their cars to respond to real-time traffic, connecting their houses to the waste management companies to arrange a pick-up or connecting their personal ID to fasten administrative services, just to quote some examples.

This fast track of connectivity, achieved through technology and innovation is necessarily confronted with slower processes of adaptation of cities, their venues and people's social and physical interactions. The need of a resilient strategy combining tradition and innovation is crucial in times of fast change.

In dense European cities, the public spaces are undergoing processes of 'erosion' in the name of their private ownership, but also due to urgent questions such as security and control. They are becoming spaces where everything is pre-defined: zoning, time schedule, materials and brands. This is producing very boring globalised 'public spaces', where freedom of activation from people is mostly erased: is it possible to skate, dance, draw with gesso, play in the new public spaces built by the stakeholders of the global financial markets?

On the other hand, the horizontal metropolis is characterised by the absence of formalised public spaces and the exclusion of interior urban areas. Public spaces are a patchwork made with the left-overs of micro-processes of privatisation and zoning. In both perspectives, cities are affected by processes of erosion of public space; the first driven and controlled by the processes of the global finance whilst the second reflecting the small and middle scale of singular real estate interventions.

We have looked at the role of public buildings as a potential to be exploited to engage in a resilient shift and regain public space for communities.

Considering their mono-functional use, public buildings can often be considered more private than those privately owned. An innovative reconsideration of public buildings, redesigned with the aim of becoming more programmatically hybrid, can transform their role within cities and communities and provoke different ways of inventing the present and of planting seeds for a better future. From this perspective, infrastructures, such as schools, can be considered ideal tester of this strategy for a series of reasons: they serve small communities, they are spread in the city, they are used only for half of the day, they have many spaces which can potentially house shared programmes.

The present part of our research work was focusing in the Veneto Region in Italy: a territory defined by the sprawl of constructions, with a lack of centres. In the past thirty years, this horizontal metropolis has eaten its own land without any long-term perspective. Holding personalised punctual policies, it has gone on interrupting the balance with the environment, the relationship between earth and water (the DNA of this region), building a new distressing physical and human landscape that the recent economic and ecologic crises are revealing.

By looking at the Veneto region as a composition of a series of layers of different nodes (green spaces, cultural buildings, schools, administrative buildings, etc…), we have considered those nodes as accumulators of experience and resources at the small scale of communities. School buildings, are where the potentials of community engagement could be better expressed.

We have looked at Treviso and made a series of observations (through urban labs, theatre plays, community engagement and engagement with more institutional subjects) and we have mapped public spaces such as parks, schools, community centres, theatres, etc. The outcome is a city made of a series of nodes which are distant maximum 15 minutes walking (figure 17-18).

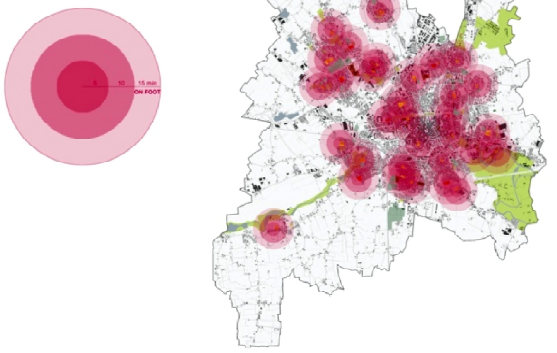


Figure 17. Treviso's parks, schools, community centres, theatres grouped in nodes.

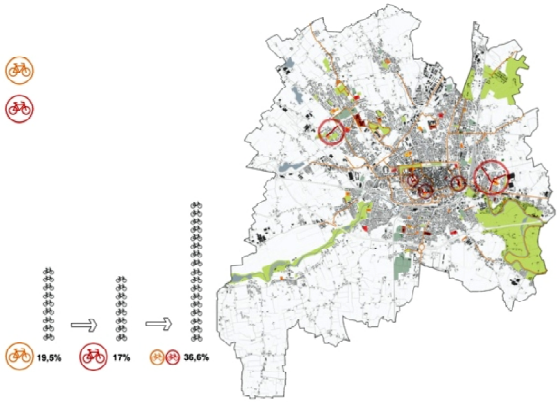


Figure 18. Existing bicycle and pedestrian paths (orange) and new bicycle paths (red).

Within this network, we choose the schools because their use is mandatory, they are friendly and recognizable by the community, they are near to the housing compounds, they are spread out evenly, they are informal spaces and they are only used for part of the day.

In Italy, codes to design schools were dating back to 1975, the last time the Country invested massively in the education sector. Working on those small buildings without huge economic resources, considered functional boxes and generally designed by architects and engineers skilled in conventionally applying the codes in he most restrictive ways, has become one of the battles of our research agenda. We questioned the design processes, from the business-plan, to the reinvention of the codes and technologies, to civic engagement.

We believe in the political role of schools, as 'manifestos for the polis'.

More recently, Italy seems to finally be taking this question seriously and our built schools have become the models to write the new guide-lines for school design.

2.2.3 The long process of research through design. The necessity to deliver a series of built examples would demonstrate the faisibility of a shift in the way of designing schools in Italy. The long time necessary to complete a design process, from the concept to delivery, was the challenge of this type of research, which brought the result of pushing the approval of the new guide-lines for school-design in Italy in 2013, an output of great impact, as at present schools are designed on the traces and ideas explicite in our built models. The following chapters summarize this work highlighting the process and each step which a single project was achieving. The research proceeded on four main different steps:

a.) Questioning the codes;
b.) Spreading the findings;
c.) Sharing ideas;
d.) Repairing the landscape;

2.2.3.1 Questioning the codes. The first challenge was the winning entry of a competition for the retrofit of two schools in Caprino Veronese, Italy (figure 19).

Figure 19. The common space of Caprino Veronese School.

Conventionally, retrofit in Italy means having a budget for structural, system and fire-safety improvements, as well as safety stairs and ramps for disabled people. Analysing the budget, we turned the necessity into a resource. We questioned the way money was to be spent and transformed the public spaces of the two school buildings. We believed in the potential of retrofitting for valuable existing structures, to both serve a new public space for the community, as well as preserve the memories and identity of the small city of Caprino. The reinvented complex is now used for different activities during the week-ends and for the agricultural fairs of the Region. Rather than demolishing the existing buildings we have implemented them with 20% of hybrid and adaptable space to be activated by the community.

The opportunity revealed clear: questioning the process, we could generate a different type of schools through retrofitting and introducing hybrid spaces. Why not extend the same challenge to design a new school model? Schools in Italy were considered functional boxes, precisely defined by the number of square metres in relation to the number of children. If, instead, we looked at schools through their potential of public space at community disposal [28] (Figure 20), we could notice that the only fixed elements were the classrooms and all the other space could be open, transformable and adaptable.

In Wels's primary school (figures 21-22), this idea became the concept of design. After erasing all the corridors, the school activities become free-standing objects under a covered space appearing as a square.

This solution defines an extraordinary unsettled space, changing according to the different points of view and offering the community the highest possibilities of intervisibility, invention and manipulation of the space.

The not so glamorous school typologies, before our interventions, in Italy, were mainly designed by engineering companies able to show a good curriculum and capacity of cost/time control for the project. We opted to partner with those companies- sometimes not even being the head of design, so to show that it was possible to build something different with the same cost and respecting times. Covolo nursery school was one of these projects.

Within this simple silent strategy, we were able to protect our research agenda and work silently to reveal the potentials of schools, as new public arenas in the city of the sprawl. The partnership with

engineering companies was also a dialectical condition to push strategies of sustainability and share them with the community.

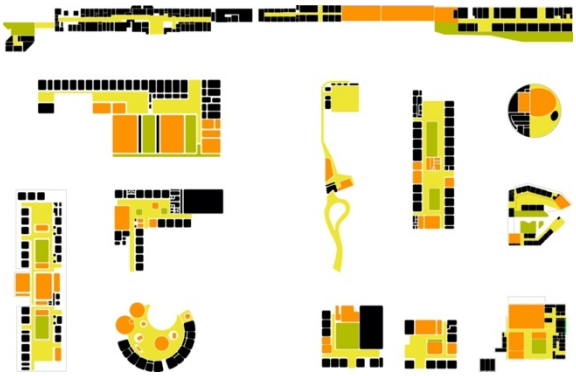


Figure 20. Classrooms as modules inside a free and flexible common space.

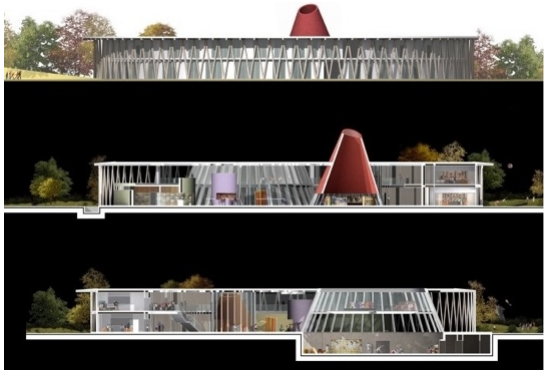


Figure 21. Wels's primary school sections.

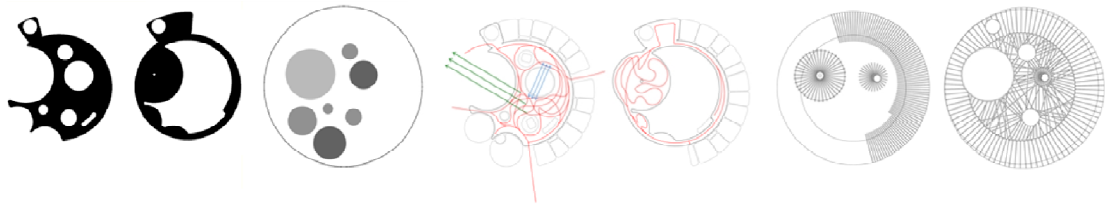


Figure 22. Wels's primary school conceptual diagrams representing the central common space and the classrooms under a circular roof.

According to Andrea Branzi, a school doesn't exist for institutional reasons. "…Didactically speaking, this is an important message, because teaching really takes place only when there is something new to be learned" [29].

What is the space character of a school in a multi-ethnic community which is constantly changing under the influence of the economic crises, migration and the digital revolution?

In Covolo nursery school (figures 23-27) one of the challenges was to question the programmatic division of spaces based on control and order and turn it into a space enhancing interaction and adaptability. The question was if children needed a complete series of niches to navigate the space or if they navigate their surroundings through imagination. We opted for the first, a school which becomes its own structure: a double concrete wall- for both the interior and the exterior- a void space which varies according to its relationship with light. On the concrete structure, which defines a free layout, a layer of colours is painted, a colour code, which allows the kids to move independently through the space. For the reinvention of the relationship between pedagogy and space, we have been awarded the FarbDesign Preis in Munchen in 2009 [30].

The solution is simple and therefore cost effective. The school is a sequence of simple spaces: a totally red courtyard, carpeted with an anti-shock surface, so that the children are free to fall or lay on the ground enabling them to look at the birds of the River Piave park in close vicinity; a 'salone', the piazza that according to Loris Malaguzzi [29] is the centre of a school and which has become the space where the community gathers after school hours and during the week-ends to organize parties, community meetings, cinema and barbecues; a series of glazed walls which enhance intervisibility and so interest among pairs. Finally, dilated thresholds expanding the spaces outside, even if it rains, and framing the landscape of wheat and grapes.

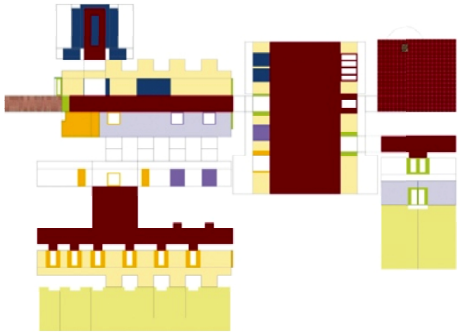


Figure 23. Covolo nursery school functional diagram.

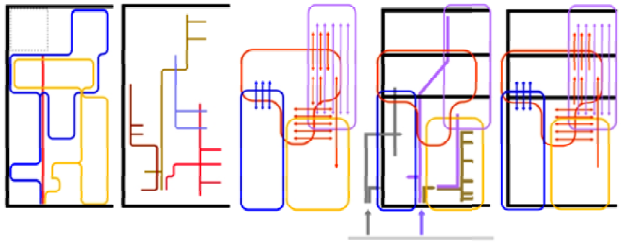


Figure 24. Covolo nursery school flows and relations diagram.

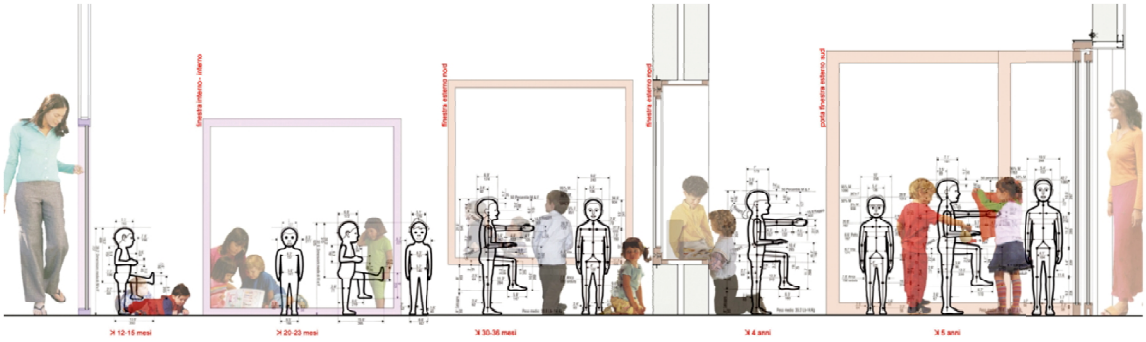


Figure 25. The intervisibility between the outdoor space, the classrooms and the common space.

Figure 26. The intervisibility inside the school atrium Covolo nursery school.

Figure 27. Covolo nursery used as a multifunctional space.

2.2.3.2 Spreading the findings. Through the publication of two books [30] explaining the concepts and processes of our strategy for school design, we managed to instigate the revision of the Italian school codes. The new guide-lines for school design in Italy, published in 2013, follow most of our built examples and research findings [31].

2.2.3.3 Sharing ideas: the 'working tables'. Imagining a new layout with low-cost budget (the nursery school in Covolo had a construction cost only of 926 €/sqm) through a creative translation of the codes was not enough for us. For the next competition we won, we decided to build 'working tables' to question and reinvent the process of design together with all the different actors and stakeholders

involved. Beyond ourselves and the municipality, we engaged with the community, the sportive, social and cultural organisations, the engineers for sustainability and the contractors.

Ponzano Primary school (figures 28-29), which won the Sfide 2009 Award from the Ministry of Environment in Italy, was born through this working table and shared through a novel and an interactive website. The novel- drawings, credited to the illustrator Roberta Gorni (figures 30-32) – told the story of Alice and her friend, the Rabbit, who helped the children to build their new school – another way in which the children were involved in the process.

Figure 28. Ponzano primary school porch.

Figure 29. Ponzano primary school courtyard.

Figure 30. R. Gorni illustration.

Figure 31. R. Gorni illustration.

Figure 32. R. Gorni illustration.

Ponzano primary school is a sustainable building in energetic, social and cost control terms. Energy: It consumes only 3.6 kWh/mc/year. Society: participated design phase with all the stakeholders involved. Cost control: the cost of the building including furniture is 960 euro/sqm.

The school is designed for 375 children aged from 6 to 10. It houses 15 classrooms and special classrooms for art, music, computer, language and science, a gymnasium, a canteen and a library, all conceived as hybrid spaces. Inside the sprawl of the Veneto Region where Ponzano is settled, this primary school constitutes a new node: a meeting place for the whole community [28].

Thanks to a creative interpretation of the Italian codes, part of the building is accessible and open to the community in after-school hours.

The building is shaped around a collective core: a central courtyard. The building's section plays the same game of connectivity through collective spaces, which all face one another as they are transparent and bounce off the colours and activities which happen inside, enhancing the opportunity of learning through experience-sharing.

The school is a 'society building', a space of multi-ethnic exchange.

The classrooms face south-east and south-west so as to improve their daylight exposure. Thanks to a judicious orientation, a thick insulation, a green roof and sophisticated technologies (geothermal heating, photovoltaic panels, natural ventilation chimneys, BMS: building automation system) the school consumes only 3.6 kWh/mc/year, reaching the Italian Class A+ efficiency rating, with a building cost of only 960 euro/sqm including furniture: proof that the very strong economic and functional requirements of an educational building are compatible with energetic efficiency and quality of space perception.

Furthermore, intervisibility is fundamental. Children learn from one another: this is the reason why the classrooms' walls are glazed above 130 cm and can easily become windows for exposing the children's works. The classroom boundary is never a wall, but a board to be closed and opened- it reveals the potential of transforming the space. Simple light furniture, movable by the children themselves allows for the reinvention of the spaces inside. Due to its huge volume, the gymnasium has been dug into the ground and natural light is brought inside through modelling the ground with new embankments. The larger adaptable spaces- library, canteen, gymnasium, exhibition spaces – all face the central courtyard and are glazed, enhancing the intervisibility among them.

After winning the competition and organising the 'working table', as in the previous experience of Ponzano, in Chiarano Primary School project [32], with Chiarano Primary School, we obtained from the municipality the inclusion within the school of the communal children library, a space which allowed us to keep the building open after school hours. The corridors are erased and the distribution on the first floor happens through a suspended wood-made bridge structure. This solution maximises the intervisibility among all the spaces where natural light comes from the glazed windows as well as from a lantern, wrapping a botanic garden for children's experimentations, suspended over the entrance hall.

The design of the ground floor turns the school into a covered, public urban square. At this point our schools can be defined the new squares of sprawl city.

The community engagement this time was pursued through a theatre play [33], of which we wrote the script working with the community and theatre association. The children acted out the play which was about the construction of the new school, sharing the experience with their parents and tutors, as well as with community and having a lot of fun.

2.2.3.4 Repairing the landscape. Repair is a rich verb in meaning. It means to mend something which is damaged or correct a mistake. In old Tuscan, it implies a condition in need of the action and finally it also means to build a roof which holds an improvement, which is the essence of our work.

In a moment of financial constraints in Italy, schools have the potential to become nodes, reinvented to repair the sprawl city with public, open and transformable spaces, able to engage the communities in a different way than spending their free time in malls. The master plan for Treviso is a kind of provocation, which will allow the municipality to understand that looking at the territory in an alternative manner and through a series of acupuncture interventions, it is possible to reinforce the network of public spaces, increase the cycling and pedestrian mobility, so forth to reduce pollution and expand the sense of community around these potential hubs. By engaging communities in projects that enable the sharing of human and material resources it will be possible to tackle inequalities with zero money expense and create a network of time-sharing and knowledge-sharing using the spaces of the school building during their free time. From object to time-sharing, from food to book-sharing to the shared vegetable garden, we imagine a new openness of some portions of all the schools; newly built as well as existing; which can turn into ethnographic, cooking and sewing labs, and more, where people share their skills and resources. The buildings themselves benefit in efficiency, reducing the costs of exercise and maintenance as the community will take care of the spaces. In this open model, schools can become spaces to activate micro-circular economies. It is clear that schools, which now are undergoing huge financial planning in Italy, can become the most interesting potential spaces to build, within this perspective, a more balanced society at a larger scale than that of the single building.

3 Results

3.1 The "Open School Manifesto"

When our work was selected for an exhibition at the 2017 Milan Triennale and later on for the Venice Architecture Biennale 2016 [33], we were asked to synthesise the findings of our investigations in a manifesto on the role of schools in cities and communities.

A first point in the resulting manifesto is that we consider schools to be open public spaces rather than correlating them to their programme. We reinvented the model of the school, turning it into a hybrid between a school and a civic centre. Secondly, we use schools to investigate space potentials rather than delivering a product. Condensing the more public activities around a courtyard – the square – and designing the spaces with glazed walls, the aim is to condense a range of different possible experiences and allow the kids to be inspired from each other. Intervisibility is a key word in our work, where children are exposed to multiple activities that can happen in parallel, during and after the school hours. In a similar way, transparency between different spaces guarantees security, pushing children to learn to take care of each other and so fighting phenomena like bullying. All our school projects have some undefined spaces which can be transformed by the community: a courtyard with a soft floor at Ponzano Primary School; oversized corridors in the nursery school in Covolo, Pederobba; and a roof terrace to be turned into a botanical garden or an art space, plus a central space which can become the community children's library or a place for weekend parties, at Chiarano Primary School (figures 33-35). All of these perform a specific task within the school programme, but each allows different exploitation of its potentials and interpretations by the community outside school hours.

Figure 33. Chiarano primary school library.

Figure 34. Chiarano primary school botanic garden placed above the library.

Figure 35. Chiarano primary school section trough the botanic garden and the library.

Thirdly, we engage with communities through very special participation workshops. To quote the major example, which was putting on a theatre play for Chiarano Primary School, the children together with us acted out the process of designing their new school and presented it to their parents (figure 36). During the design process for Ponzano Primary School, we wrote and illustrated a story about the new school's design and organised an after-school club for storytelling on the theme. Architecture was the topic of discussion with communities while designing schools not only so that they could participate in the design process but also to share with them the magic of space-making.

Figure 36. The children represent the play of the future construction of the school.

In order to involve the community in the process of financing, planning, designing and building, as well as encouraging the reconsideration of policies and codes and engaging with all the potential stakeholders, we instituted 'working tables'. These workshops aim to spread the concepts which drive our ecological approach, as most of its schools are testers of reduced energy consumption and so become manifestos of environmental sustainability. A combination of cutting-edge technologies with the basic principles of vernacular architecture enables the creation of buildings which can function effectively without insulation. Natural ventilation strategies were designed and shared with the communities, to develop the children's awareness to the topic.

Fourthly, as budgets are often limited, our schools are turned into economic models to fight inequality. On the private market, the Kite school complex in Fontaniva (figure 37) is an adaptable, low-cost structure. In fact, together with the owners, we have defined a business plan to circulate human resources, time-sharing and people skills: it has generated a circular economy for education and fun in the area (figure 38).

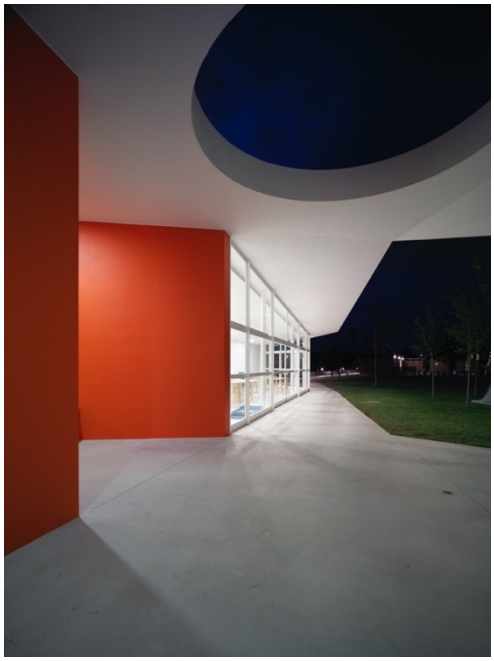
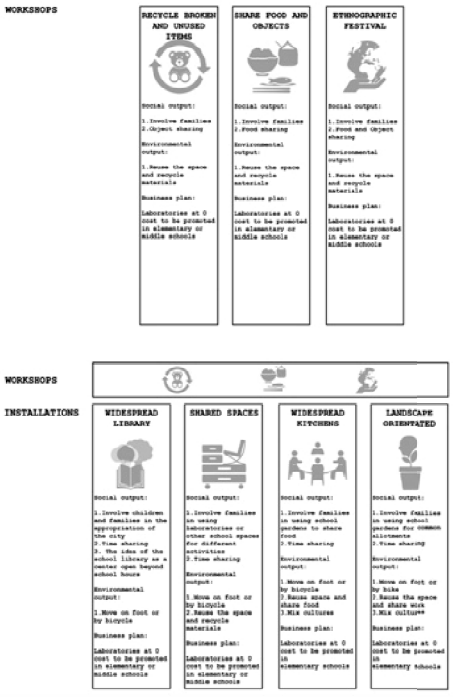


Figure 37. 'The Kite' view of the circular hole in the roof.

Figure 38. Images of the multiple uses of the building.



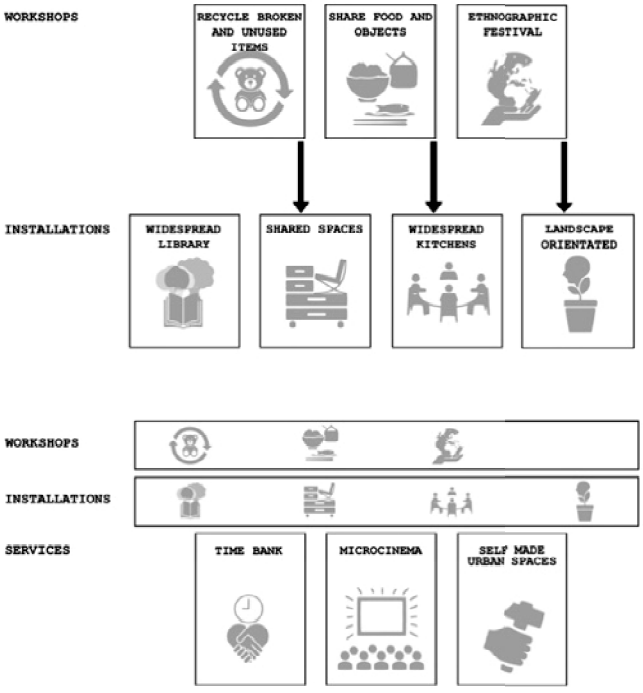


Figure 39. Schemes of the processes with which the new schools will be used and lived.

3.2 Circular economies

Thanks to the attention we have gained on the national press and the impact of our projects on the redefinition of the Italian guide lines, we were contacted by a group of educators, who work to support families taking care of their children after school hours and during holidays.

The owners of the school, who are also managing the programmes, worked with us, both believing that a holistic approach of design could contribute to giving form to the space they needed for their specific pedagogic aims. At the same time creating a relationship with the environment, with the budget constraints, with the community time and resource-sharing and with the short times of delivering.

The task was to also build a low-cost structure with controlled maintenance and management costs together with a business plan able to engage and circulate human resources, time-sharing and people skills to generate a circular economy for education and fun for Fontaniva (figure 39). The school, named 'The Kite', is the first of a series of planned interventions for the Region.

The Kite is a big roof, captured whilst flying to create a repair and a shadow for all the potential activities which are taking place under it (figure 40). The building's orientation towards the south produces an opposite north opening which benefits from its orientation during summer time. The Kite (figure 26) is a thick concrete structure without any insulation. It adheres to its own thermal inertia to protect from the summer heat, creating a constant temperature inside the spaces. The interior is made of a bigger multifunctional space and a smaller one for the younger children.

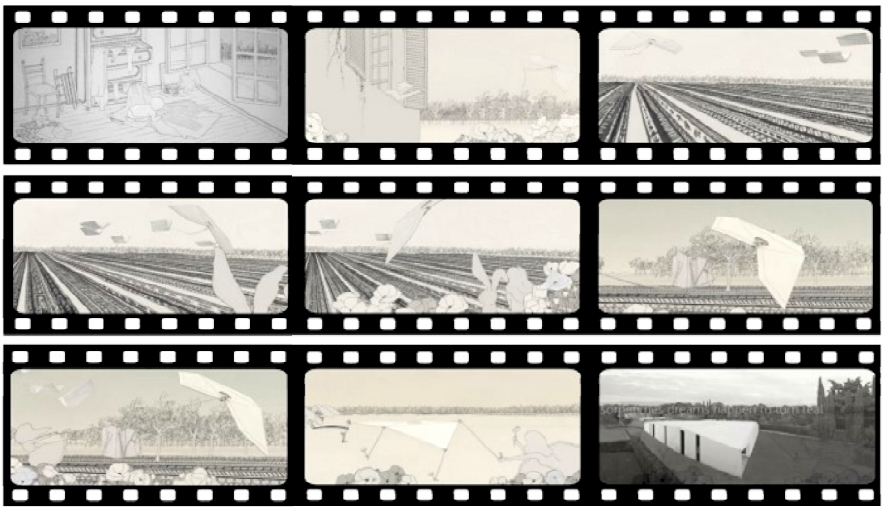


Figure 40. A short movie showing that the building itself is a kite anchored to the ground.

A series of labs, race tracks, sand arenas and swimming pools design the open-air space. The pitched roofs of the buildings serving the swimming pools are made of solar and photovoltaic panels which allow the pre-heating of the pool's water in the mid-seasons and the heating of the inside spaces during the winter (figure 41). In this way, the buildings generate a zero-energy and zero-emission system in equilibrium with the environment. In the inside, The Kite is enriched with colour and different materiality solutions, as portions of the walls are turned into white-boards or LEGO-surfaces (figure 42). An eye was cut in the roof allowing for the game of moving shadows projected either on the walls or on the grass (figure 43). The inside spaces are visually connected to the outside through huge glazed sliding windows, to allow the continuity between the inside and the outside.

The building is activated by the time, skills and human resources of the community, who offer to co-manage the centre. The costs for the children's fees are re-balanced in the aim of erasing inequalities and building a multi-ethnic community economically and socially balanced.

The Kite doesn't have any thermal insulation, not because it doesn't respect the codes, but because it doesn't need it. This decision has been a problem for the planning permission as we weren't able to tick all the boxes needed to respond conventionally to the energetic and sustainability demands. Computer programs pre-determined and gave us information as we assigned the grade 0 to the box of insulation. It has been necessary to work in close contact with the sustainability engineers to generate

all the calculations out of the conventional tools. It entailed more work from the experts but helped generate the expected result and the consequent approval.

Figure 41. Swimming pools services that have pitched roof coated by photovoltaic panels.

Figure 42. The interior.

Figure 43. The "eye" cut into the roof.

3.3 The new Italian guide-lines for school design

Thanks to the spread of our publications, interviews and awards gained, our schools were serving as a model for tracing by the Ministry of Education, the new Italian guide-lines of school design: https://www.ediliziascolastica.it/wp-content/uploads/2018/02/Linee_guida_scuole_modello_in_Italia.pdf.

The guide lines are traced on the backbone of our schools such as the introduction of hybrid spaces, opened to the community after the school hours, the presence of a central communal space, called the agora, flexibility and adaptability of the spaces and intervisibility among the classrooms, environmental sustainability.

3.4 The Venice Architecture Biennale 2016

All our projects together with our research outputs were exhibited in the 15th Venice Architecture Biennale [33] with the Installation Aequilibrium (part of the EDU-Care pavilion) exhibited in the Corderie of the Arsenale, which was designed as a metaphor of our work. Quoting from the book, titled Aequilibrium (figures 44-46), we have published in that occasion: (figure 32) We design a structure which finds balance throughout overhanging; alternating from side to side, rebounding tensions and bringing them back to the centre in an effort that has the power of simple stability yet looking endless.

We design a suspended structure, wrapping around the historic column of the Corderie dell'Arsenale in Venice. It holds together memory and a new horizon, moving the spectator's viewpoint, allowing him/her to climb up without slipping, to sit and also lay on a cork carpet.

We design a volume built through a multiplicity of small steel pieces, weld together to generate a self-supporting suspended element without any need of vertical supports. The steel pieces adapt, some of them are visible, others aren't, but all are fundamental to balance the tensions.

Like people, their time, knowledge and skills concur to move to a new possible circular economic model more balanced with our planet. We engage with this energy while designing our schools.

We design a knot. Questioning the conventional processes to designing a school, we tie together all resources at disposal: economic, human, social, energetic; proposing a new, more balanced model to fight inequalities.

We design a toy. Like our schools with their public spaces opened after school hours, spaces are created for interaction and play for the multicultural and multi-ethnic communities around them.

We design a perpetual path. There is an entrance- the child entering the community through schools and continuing to feed that community perpetually.

We design it red. A coloured node in the grey city of the sprawl.

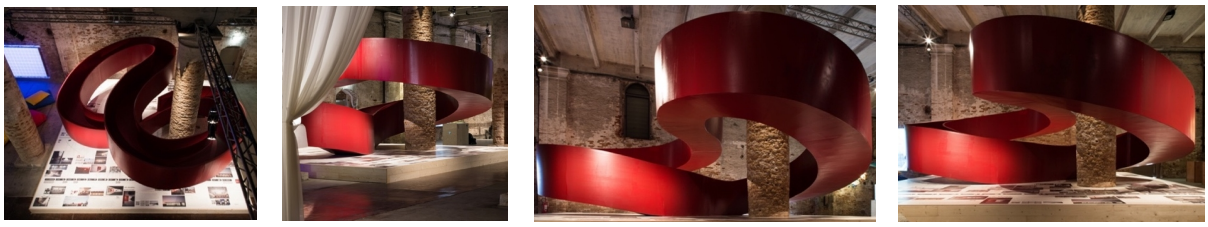


Figure 44. Pictures of Aequilibrium installation in the 15th Venice Architecture Biennale.

Figure 45. Adults and children enjoy the Aequilibrium installation.

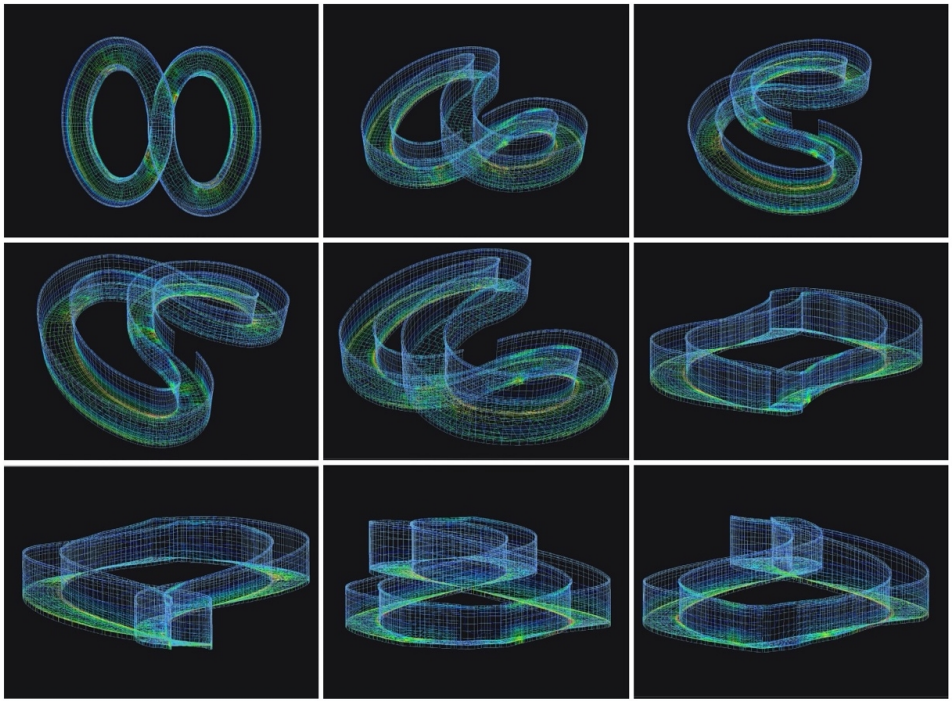


Figure 46. Images of the Aequilibrium installation structural model.

4 Discussion

Revealing the bad status of Italian schools, learning from the past best practices and delivering some built examples, our research work has the aim of raising some relevant questions about school buildings and their role in the city.

Being the benchmarks of the new residential developments at the beginning of the past century, school buildings played the significant role of becoming a sort of laic churches, as in Dudok's examples in the Netherlands. In a similar way the open-air schools became political tools to express the values of a new democratic world, which was healthy and open to all people, represented by open spaces and glazed facades.

In the expanding post-war suburbanity, school buildings consolidated their role of local public spaces as in the the Prestolee school without tears by Francis O'Neil.

Are these small buildings able to be reinvented as new nodes in the liquid modernity of nets and smart cities we live in? Which is the actual role they have in the city and the community?

In the common understanding, the safety codes and the compulsory use of the building originates a misunderstanding about the hidden potentials in school typologies, in defence of a merely functional approach. Potentials which, from our point of view, can be regenerated, on the one side, opening these buildings after the school hours, on the other side, hybridizing the model, where spaces are simple but rich in the opportunities they offer to different scopes.

This possibility is crucial in a moment of economic crises. Hybrid spaces can be turned into a long term economic and human resource- we are referring to time-sharing- for people.

While the programs for school buildings are very specific and following the codes, no research seems to be taking place in a great number of recent schools. This was not always the case in the past.

Both European and American architects of the time explored ways, in which they could combine concerns for health and security together with new child-centred pedagogical techniques into the space of school buildings. Their rigorous functional solutions, together with the attention and sensitivity to the child's scale and the experimentation of new materials resulted in many school buildings serving as very important vehicles of cultural expression of the culture and society.

The classroom as a unit of space together with its possible aggregations became the topic of the experimentations of Gill and Lescaze, of Neutra and Saarinen in the US and of Lurcat and Bedoin and Lods in Europe, just to quote a few.

From Bruno Taut's School in Dammweg, to Hans Sharoun's, Aldo Van Eyck and Herman Herzberger, different models of aggregation were reinventing the school building as a metaphor of a city, where a house- the classroom- and a series of public spaces are gathered around a public street.

What is happening in our contemporary digital and multi-cultural world? In a world focusing on the relationship between parts more than on the parts themselves? Has it still sense the idea of a school conceived as a hierarchy of spaces, distinguishing between different and specialized zones? How can the school building become a new tool for children's education and their entrance into the community?

To enhance the potentials of school buildings, it is also necessary to look them from the point of view of technical innovation.

The above quoted examples of the open-air schools, designed by Duiker and Bijovoet in Amsterdam or the Hunstanton School by Alison and Peter Smithson are only two of a series of examples where architecture, experimenting with some new construction technologies, introduced innovation in living and education.

We are today facing an ecologic problem, together with an economic one.

Can we imagine school buildings as manifestos to educate new generations in a more sustainable and economically fair perspective?

When the classroom became a space open to the outside, the request for new lighter desks and chairs easily movable to the open air, pushed the designers to experiment new devices through materials and forms to inhabit those spaces. From the single chairs designed by Mart Stam or Marcel Breuer, using the newly invented tubular steel, to the design research of Jean Prouvè, who provocatively worked on a model of a whole school building for a series production, quick and easy to assemble and disassemble, the history of the school furniture follows the paths of the building manipulations and experimentations.

How is nowadays the digital world affecting the way we inhabit the public spaces and among them school buildings? Are the contemporary digital devices pushing the transformation of inside and outside spaces of school buildings?

Starting as a very local provocation, with the idea that it was possible to renovate schools and allow them to be expression of time, our schools have pushed the boundaries of legislation, impacting on the way school design shapes the Country, Will the new guide-lines be able to make the fast technological changes more resilient, thanks to the empowering of people and communities gathered around schools?

5 Conclusion

The critical choice of the some best examples from the past, the collection of data about the status of schools in Italy and the selection of the projects of school buildings which were discussed in the paper, compared to the many we have addressed with during the past twenty years of work, are confronting with the question we posed and which are fundamental for understanding the role and potentials of school buildings in the present fast transformation of cities. These projects do not claim to become answers to the question we posed, but they take the responsibility of experimenting with some crucial aspects such as: questioning the processes of funding, designing, planning, building a school and engaging with its community, as well as reconsidering some aspects such as the relationship between interior and exterior spaces, the role of technology and the identity the have within communities. Through their capacity of changing Italian policies, these small built examples have produced quite an impact in shaping school design in Italy and becoming best practices to follow for all architects. A future perspective to be explored is the reconsideration of the possibility of exporting the same strategy to other fields, such as the design of other public buildings or infrastructures.

An continuous innovative reconsideration of school buildings and their role within the urban realm and the community, can provoke different ways of inventing the present and of planting seed for a better future. In this view, school buildings can still be considered great political mediums.

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